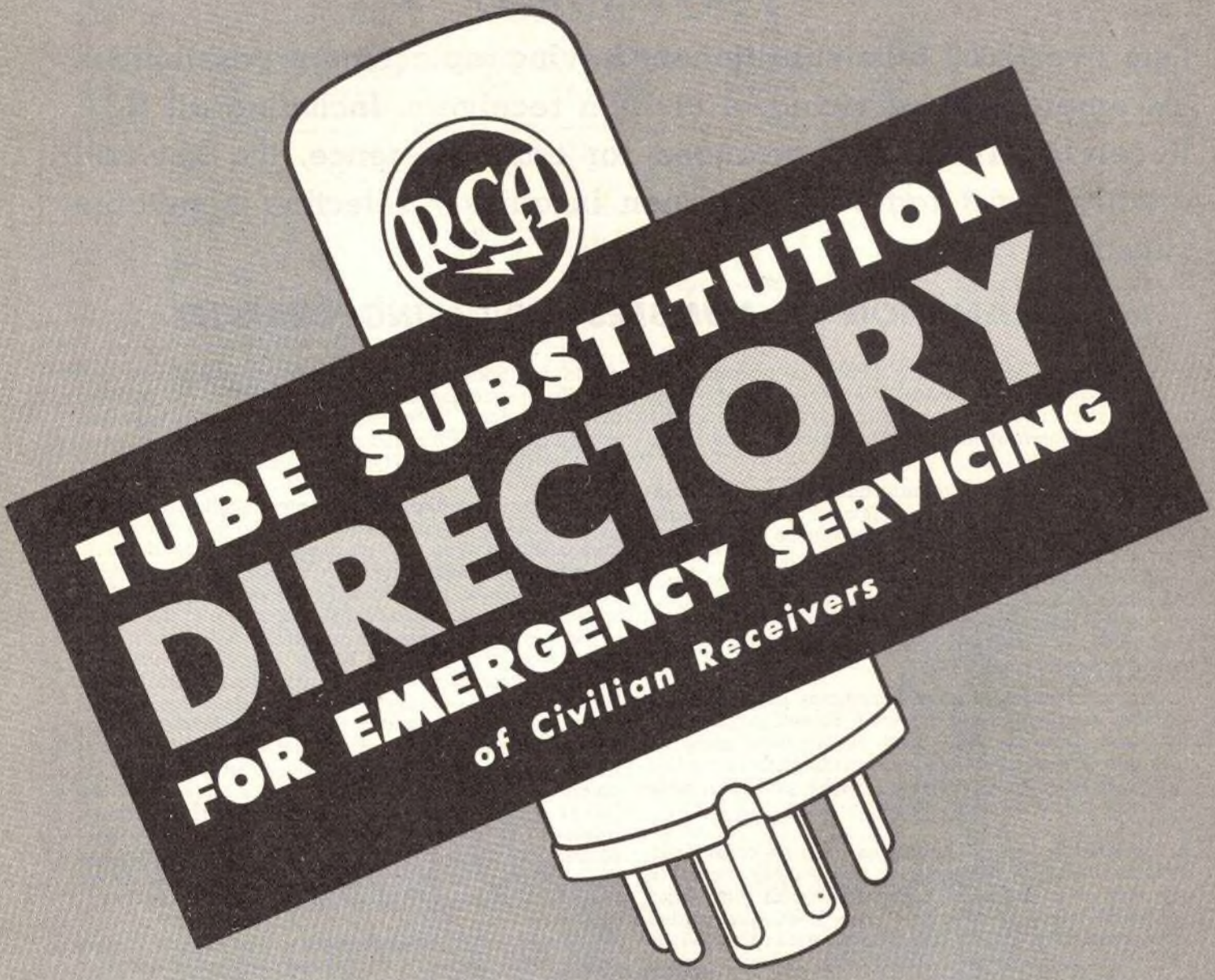
M. O. Zigler



COMMERCIAL ENGINEERING SECTION
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HARRISON, NEW JERSEY

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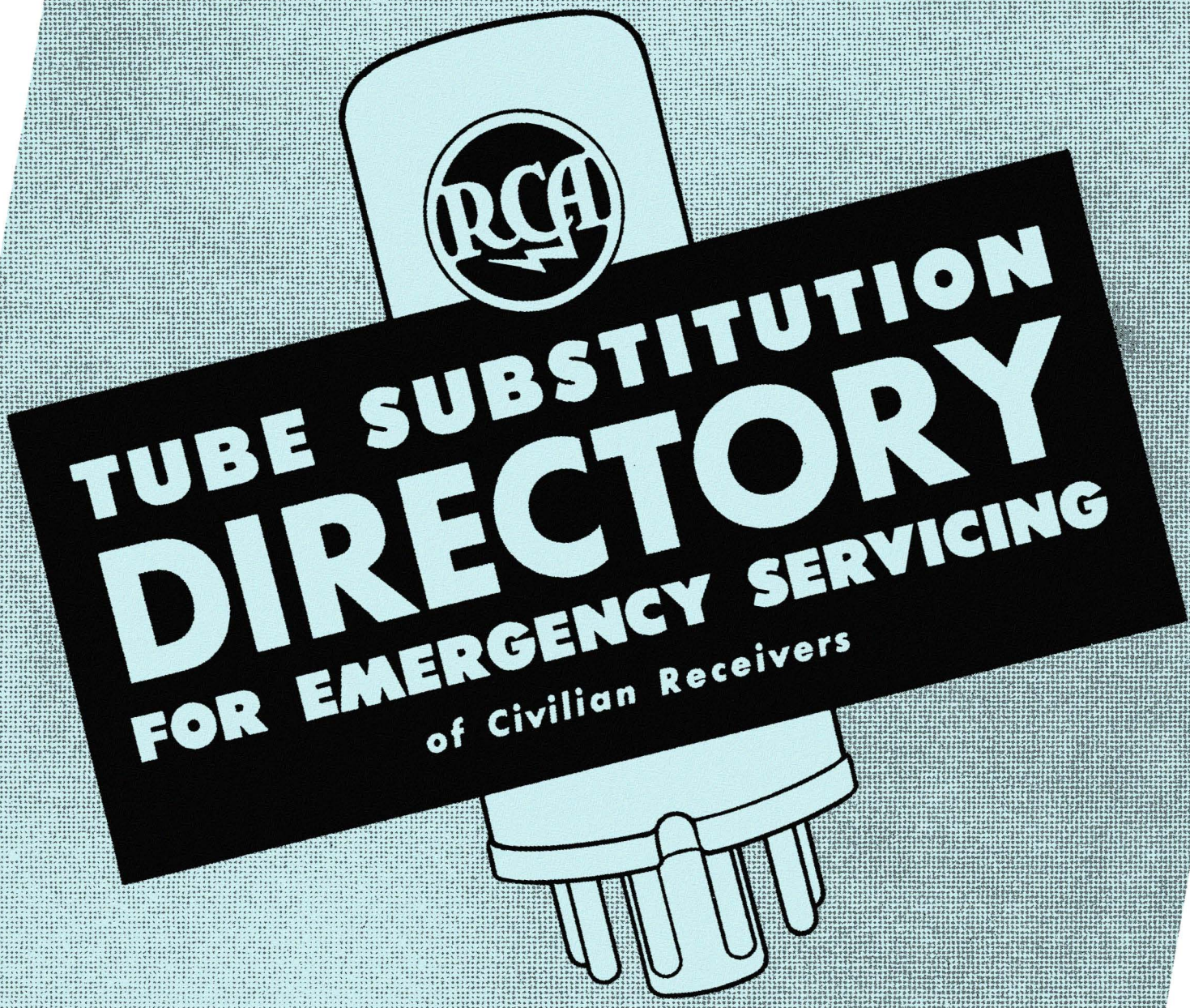

TUBE SUBSTITUTION DIRECTORY FOR EMERGENCY SERVICING

of Civilian Receivers

COMMERCIAL ENGINEERING SECTION
RCA Victor Division
RADIO CORPORATION OF AMERICA
HARRISON, NEW JERSEY

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This Directory

lists over 2000 tube substitutions having replacement possibilities for emergency servicing of civilian receivers. Including all RCA Receiving Tubes and arranged for easy reference, the list will greatly assist radio service men in quickly selecting a suitable substitute type.

EXPLANATION OF NUMBERS INDICATING CHANGES

In making such substitutions, it may be necessary to make certain basic changes in every receiver. Such changes are indicated by numbers shown in the "change" column of the list. Their significance is explained below.

Some substitutions will require circuit changes or adjustments additional to those indicated in the "change" column. Before making any substitutions, the service man should, therefore, check the ratings and characteristics of the proposed substitute against the operating conditions of the circuit. Convenient references for tube ratings and characteristics are the RCA Receiving Tube Manual RC-14*, and the RCA Receiving Tube Characteristic Booklet (Form 1275-B)*.

Many of the suggested substitutions may cause lowered receiver sensitivity and lowered power output with increased distortion, but such substitutions may be desirable on the basis that they provide the only method by which broadcast receivers can be put in useable condition under existing circumstances.

1 signifies that **space limitations** must be considered, because the substitute type is appreciably larger in size than the type to be replaced. Small differences in overall length or diameter have been disregarded since, ordinarily, such differences do not in themselves affect interchangeability. They may, however, affect some shielding changes.

2 indicates that **wiring changes** will be required. Such changes may include any of the following items: (1) lengthening of top-cap lead; (2) changing from top-cap connection to a socket-terminal connection, or vice versa (if change is from single-ended metal type to a top-cap type, it may be necessary to use a suitably shielded lead to the top-cap); or (3) rewiring of socket (except for filament- or heater-circuit changes which are considered under "change number" 3). CAUTION: When wiring changes are made, it may also be necessary to remove wiring connections utilizing spare terminals of the socket. Special attention should also be given to the pin No. 1 connection of octal-base types, because in different circuits this pin may be used to ground the shield, left floating, or made a high-potential common tie. The particular arrangement used in the receiver and its relation to the substitute tube will determine what has to be changed in order that proper connections for the substitute type can be made.

3 indicates that **filament- or heater-circuit changes** will be required to provide the proper voltage or current for the substitute type. When heaters are connected in parallel, a substitute type with lower heater voltage than the type to be replaced may be used if a series resistor of proper value is inserted in one of the heater leads. When heaters are operated in series, a substitute type with different heater rating than the type to be replaced may be used by adding series and/or shunt resistors to the heater string. Sample calculations of series- and shunt-resistor values are shown on page 16. When shunt or series resistors are added to the heater circuit, leave ample space around them for adequate ventilation. The practice of using shunt resistors is suggested only as an emergency measure, because the heater-string current during the warm-up period does not always divide proportionately between the heater and its shunt resistor. As a result, the heater may be temporarily but seriously overloaded.

4 indicates that **socket changes** will be required unless suitable adaptors can be procured. The use of adaptors may be restricted in some receivers by lack of space or other considerations such as alignment difficulties caused by capacitances added to the input and output circuits by the adaptor.

Supplemental Notes

In making substitutions for Power Output Types, the service man may find that the load resistance for the tube to be replaced is not suitable for use with the substitute type. When it is impractical to change the load resistance to the required value, some benefit may be obtained by adjusting the grid bias to give lowest distortion, but in so doing, care should be taken to not exceed the dissipation ratings of the tube. Also, if the substitute type has greater power-handling capability than the tube to be replaced, the current drain of the substitute tube must be kept within the current-delivering ability of the power supply in the receiver.

(Continued on page 13)

* Available through RCA Tube Distributors or direct from Commercial Engineering Section, Radio Corporation of America, Harrison, N. J. The RC-14 is $0.25 postpaid. Single copy of Form 1275-B is free on request.

Information contained herein is based on our best engineering experience, but no responsibility is accepted for errors or unsatisfactory results.

TUBE SUBSTITUTION DIRECTORY

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
OZ4	OZ4-G	
	6X5	1, 2, 3
	6X5-GT/G	1, 2, 3
	7Y4	1, 2, 3, 4
	See pp. 14-15: Key 2, 4	
OZ4-G	OZ4	
	6X5	1, 2, 3
	6X5-GT/G	1, 2, 3
	7Y4	1, 2, 3, 4
	See pp. 14-15: Key 2, 4	
1A3	See pp. 14-15: Key 6	
1A4-P	1D5-GP	4
	1D5-GT	4
	34	1
	See pp. 14-15: Key 42-44, 50	
1A5-GT/G	1LA4	4
	1N6-G	1, 2
	See pp. 14-15: Key 12, 14, 16	
1A6	1C6	3
	1C7-G	3, 4
	1D7-G	4
	See pp. 14-15: Key 20	
1A7-GT/G	1B7-GT	3
	1LA6	2, 4
	1R5	2, 4
	See pp. 14-15: Key 20	
1B4-P	1E5-GP	4
	15	3, 4
	32	1
	See pp. 14-15: Key 42-44, 50	
1B5	1H6-G	4
	See pp. 14-15: Key 32	
1B7-GT	1A7-GT/G	3
	1LA6	2, 3, 4
	1R5	2, 3, 4
	See pp. 14-15: Key 20	
1C5-GT/G	1D8-GT	2
	1LB4	3, 4
	1Q5-GT/G	
	1S4	4
	1T5-GT	3
	3Q4	3, 4
	3Q5-GT/G	3
	3S4	3, 4
	See pp. 14-15: Key 12, 14, 16, 17	
1C6	1A6	3
	1C7-G	4
	1D7-G	3, 4
	See pp. 14-15: Key 20	
1C7-G	1A6	3, 4
	1C6	4
	1D7-G	3
	See pp. 14-15: Key 20	
1D5-GP	1A4-P	4
	1D5-GT	
	34	1, 4
	See pp. 14-15: Key 42-44, 50	
1D5-GT	1A4-P	4
	1D5-GP	
	34	1, 4
	See pp. 14-15: Key 42-44, 50	
1D7-G	1A6	4
	1C6	3, 4
1D7-G—Continued		
	1C7-G	3
	See pp. 14-15: Key 20	
1D8-GT	See pp. 14-15: Key 17, 31	
1E5-GP	1B4-P	4
	15	3, 4
	32	1, 4
	See pp. 14-15: Key 42-44, 50	
1E7-G	See pp. 14-15: Key 19	
1F4	1E7-G	3, 4
	1F5-G	4
	1G5-G	4
	1J5-G	4
	See pp. 14-15: Key 14, 19	
1F5-G	1E7-G	2, 3
	1F4	4
	1G5-G	
	1J5-G	
	See pp. 14-15: Key 14, 19	
1F6	1F7-G	4
	See pp. 14-15: Key 53	
1F7-G	1F6	4
	See pp. 14-15: Key 53	
1G4-GT/G	See pp. 14-15: Key 28, 31, 38, 39	
1G5-G	1E7-G	2, 3
	1F4	4
	1F5-G	
	1J5-G	
	See pp. 14-15: Key 14	
1G6-GT/G	See pp. 14-15: Key 10	
1H4-G	30	4
	See pp. 14-15: Key 28	
1H5-GT/G	1LH4	2, 4
	See pp. 14-15: Key 39	
1H6-G	1B5	4
	See pp. 14-15: Key 32	
1J5-G	1E7-G	2, 3
	1F4	4
	1F5-G	
	1G5-G	
	See pp. 14-15: Key 14	
1J6-G	19	3, 4
	See pp. 14-15: Key 10, 19	
1L4	1LN5	1, 4
	1N5-GT/G	1, 2, 4
	1S5	2
	3A8-GT	1, 2, 3, 4
	See pp. 14-15: Key 44, 50-52	
1LA4	1A5-GT/G	4
	1N6-G	1, 4
	See pp. 14-15: Key 12, 14, 16	
1LA6	1A7-GT/G	2, 4
	1B7-GT	2, 3, 4
	1R5	4
	See pp. 14-15: Key 20	
1LB4	1C5-GT/G	3, 4
	1D8-GT	3, 4
	1Q5-GT/G	3, 4
	1S4	3, 4
	1T5-GT	4
	3Q4	3, 4
1LB4—Continued		
	3Q5-GT/G	3, 4
	3S4	3, 4
	See pp. 14-15: Key 12, 14, 17	
1LH4	1H5-GT/G	2, 4
	See pp. 14-15: Key 39	
1LN5	1L4	4
	1N5-GT/G	2, 3, 4
	1S5	4
	3A8-GT	2, 3, 4
	See pp. 14-15: Key 44, 50-52	
1N5-GT/G	1L4	2, 4
	1LN5	2, 4
	1S5	2, 4
	3A8-GT	2, 3
	See pp. 14-15: Key 44, 50-52	
1N6-G	See pp. 14-15: Key 16	
1P5-GT	1T4	2, 4
	See pp. 14-15: Key 44, 50-52	
1Q5-GT/G	1C5-GT/G	
	1D8-GT	2
	1LB4	3, 4
	1S4	4
	1T5-GT	3
	3Q4	3, 4
	3Q5-GT/G	3
	3S4	3, 4
	See pp. 14-15: Key 12, 14, 17	
1R5	1A7-GT/G	1, 2, 4
	1B7-GT	1, 2, 3, 4
	1LA6	1, 4
	See pp. 14-15: Key 20	
1S4	1C5-GT/G	1, 4
	1D8-GT	1, 4
	1LB4	1, 3, 4
	1Q5-GT/G	1, 4
	1T5-GT	1, 3, 4
	3Q4	3
	3Q5-GT/G	1, 3, 4
	3S4	3
	See pp. 14-15: Key 12, 14, 17	
1S5	3A8-GT	1, 2, 3, 4
	See pp. 14-15: Key 51, 52	
1T4	1P5-GT	1, 2, 4
	See pp. 14-15: Key 44, 50-52	
1T5-GT	1C5-GT/G	3
	1D8-GT	2, 3
	1LB4	4
	1Q5-GT/G	3
	1S4	3, 4
	3Q4	3, 4
	3Q5-GT/G	3
	3S4	3, 4
	See pp. 14-15: Key 12, 14, 17	
1-v	See pp. 14-15: Key 1, 2	
2A3	45	
	See pp. 14-15: Key 8	
2A5	46	1, 4
	47	1, 4
	59	1, 3, 4
	See pp. 14-15: Key 14	
2A6	See pp. 14-15: Key 32, 40	

1. Space limitations.
2. Wiring changes.
3. Filament voltage and/or current changes.
4. Socket change.

For explanation of these changes, see page 2.

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
2A7	See pp. 14-15: Key 20	
2B7	See pp. 14-15: Key 49	
2E5	See pp. 14-15: Key 26	
3A8-GT	See pp. 14-15: Key 38, 51	
3Q4	1C5-GT/G	1, 3, 4
	1D8-GT	1, 3, 4
	1LB4	1, 3, 4
	1Q5-GT/G	1, 3, 4
	1S4	3
	1T5-GT	1, 3, 4
	3Q5-GT/G	1, 4
	3S4	
	See pp. 14-15: Key 12, 14, 17	
3Q5-GT/G	1C5-GT/G	3
	1D8-GT	2, 3
	1LB4	3, 4
	1Q5-GT/G	3
	1S4	3, 4
	1T5-GT	3
	3Q4	4
	3S4	4
	See pp. 14-15: Key 12, 14, 17	
3S4	1C5-GT/G	1, 3, 4
	1D8-GT	1, 3, 4
	1LB4	1, 3, 4
	1Q5-GT/G	1, 3, 4
	1S4	3
	1T5-GT	1, 3, 4
	3Q4	
	3Q5-GT/G	1, 4
	See pp. 14-15: Key 12, 14, 17	
5T4	5U4-G	1, 3
	5X4-G	1, 2, 3
	5Z3	1, 3, 4
	See pp. 14-15: Key 2	
5U4-G	5T4	
	5X4-G	2
	5Z3	4
	See pp. 14-15: Key 2	
5V4-G	5T4	
	5U4-G	1, 3
	5X4-G	1, 2, 3
	5Z3	1, 3, 4
	83-v	4
	See pp. 14-15: Key 2	
5W4	5T4	1, 3
	5U4-G	1, 3
	5V4-G	1, 3
	5W4-GT/G	
	5X4-G	1, 2, 3
	5Y3-GT/G	3
	5Y4-G	1, 2, 3
	5Z3	1, 3, 4
	5Z4	3
	80	1, 3, 4
	83-v	1, 3, 4
	See pp. 14-15: Key 2	
5W4-GT/G	5T4	1, 3
	5U4-G	1, 3
	5V4-G	1, 3
	5W4	
	5X4-G	1, 2, 3
	5Y3-GT/G	3
	5Y4-G	1, 2, 3
	5Z3	1, 3, 4
	5Z4	3
	80	1, 3, 4
	83-v	1, 3, 4
	See pp. 14-15: Key 2	
5X4-G	5T4	2
	5U4-G	2
	5Z3	4
	See pp. 14-15: Key 2	
5Y3-GT/G	5T4	1
	5U4-G	1, 3
	5V4-G	1
	5X4-G	1, 2, 3
	5Y4-G	1, 2
	5Z3	1, 3, 4
	5Z4	
	80	1, 4
	83-v	1, 4
	See pp. 14-15: Key 2	
5Y4-G	5T4	2
	5U4-G	1, 2, 3
	5V4-G	2
	5X4-G	1, 3
	5Y3-GT/G	2
	5Z3	1, 3, 4
	5Z4	2
	80	4
	83-v	4
	See pp. 14-15: Key 2	
5Z3	5T4	4
	5U4-G	4
	5X4-G	4
	See pp. 14-15: Key 2	
5Z4	5T4	1
	5U4-G	1, 3
	5V4-G	1
	5X4-G	1, 2, 3
	5Y3-GT/G	
	5Y4-G	1, 2
	5Z3	1, 3, 4
	80	1, 4
	83-v	1, 4
	See pp. 14-15: Key 2	
6A3	2A3	3
	6B4-G	4
	45	3
	See pp. 14-15: Key 8	
6A4	6G6-G	3, 4
	6K6-GT/G	3, 4
	6V6	3, 4
	6V6-GT/G	3, 4
	7B5	3, 4
	7C5	3, 4
	38	2
	41	3, 4
	89	2, 3, 4
	See pp. 14-15: Key 12, 14	
6A6	6N7	4
	6N7-GT/G	4
	6Y7-G	4
	6Z7-G	4
	53	3
	79	2, 4
	See pp. 14-15: Key 10	
6A7	2A7	3
	6A7S	
	6A8	2, 4
	6A8-G	4
	6A8-GT	2, 4
	6D8-G	3, 4
	7A8	2, 3, 4
	7B8	2, 4
	12A8-GT	2, 3, 4
	12A8-GT/G	2, 3, 4
6A7S	2A7	3
	6A7	
	6A8	2, 4
	6A8-G	4
	6A8-GT	2, 4
	6D8-G	3, 4
	7A8	2, 3, 4
	7B8	2, 4
	12A8-GT	2, 3, 4
	12A8-GT/G	2, 3, 4
6A7S—Continued		
	6A8	2, 4
	6A8-G	4
	6A8-GT	2, 4
	6D8-G	3, 4
	7A8	2, 3, 4
	7B8	2, 4
	12A8-GT/G	2, 3, 4
	See pp. 14-15: Key 20-24	
6A8	2A7	1, 2, 3, 4
	6A7	1, 2, 4
	6A7S	1, 2, 4
	6A8-G	1, 2
	6A8-GT	
	6D8-G	1, 2, 3
	7A8	2, 3, 4
	7B8	2, 4
	12A8-GT/G	3
	See pp. 14-15: Key 20-24	
6A8-GT	2A7	1, 2, 3, 4
	6A7	1, 2, 4
	6A7S	1, 2, 4
	6A8	
	6A8-G	1, 2
	6D8-G	1, 2, 3
	7A8	2, 3, 4
	7B8	2, 4
	12A8-GT/G	3
	See pp. 14-15: Key 20-24	
6AB5/6N5	6U5/6G5	3
	See pp. 14-15: Key 25, 26	
6AB7	6SG7	2
	7H7	4
	See pp. 14-15: Key 44, 48, 50	
6AC5-GT/G	25AC5-GT/G	3
	See pp. 14-15: Key 10	
6AC7	6AG5	4
	6SH7	2
	7G7	4
	See pp. 14-15: Key 44, 48, 50	
6AD6-G	6AF6-G	
	See pp. 14-15: Key 27	
6AD7-G	See pp. 14-15: Key 15	
6AE5-GT/G*	6C5	
	6C5-GT/G	
	6F8-G	1, 2, 3
	6J5	
	6J5-GT/G	
	6L5-G	1, 3
	6P5-GT/G	
	6SN7-GT	2, 3
	7A4	4
	12J5-GT	3
	12SN7-GT	2, 3
	27	1, 3, 4
	37	1, 4
	56	1, 3, 4
	76	1, 4
	See pp. 14-15: Key 28-41	
6AE6-G	See pp. 14-15: Key 35	
6AE7-GT	See pp. 14-15: Key 34	
6AF6-G	6AD6-G	1
	See pp. 14-15: Key 27	
6AG5	6AC7	1, 3, 4
	6SH7	1, 4
	7G7	1, 3, 4
	12SH7	1, 3, 4
	See pp. 14-15: Key 44, 48, 50	
6AG7	See pp. 14-15: Key 14	

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.
3. Filament voltage and/or current changes.
4. Socket change.

TUBE SUBSTITUTION DIRECTORY

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6B4-G	2A3	3, 4
	6A3	4
	45	3, 4
	See pp. 14-15: Key 8	
6B5	6N6-G	4
	See pp. 14-15: Key 11, 12, 14	
6B8-G	2A6	3, 4
	6Q7	2
	6Q7-G	
	6Q7-GT	2
	6SQ7	2
	6SQ7-GT/G	2
	6T7-G	3
	7B6	2, 4
	7C6	2, 3, 4
	12Q7-GT/G	2, 3
	12SQ7	2, 3
	12SQ7-GT/G	2, 3
	75	4
	See pp. 14-15: Key 32, 40	
6B7	2B7	3
	6B7S	
	6B8	2, 4
	6B8-G	4
	12C8	2, 3, 4
	See pp. 14-15: Key 49	
6B7S	2B7	3
	6B7	
	6B8	2, 4
	6B8-G	4
	12C8	2, 3, 4
	See pp. 14-15: Key 49	
6B8	2B7	1, 2, 3, 4
	6B7	1, 2, 4
	6B7S	1, 2, 4
	6B8-G	1, 2
	12C8	3
	See pp. 14-15: Key 49	
6B8-G	2B7	3, 4
	6B7	4
	6B7S	4
	6B8	2
	12C8	2, 3
	See pp. 14-15: Key 49	
6C5*	6AE5-GT/G	
	6C5-GT/G	
	6F8-G	1, 2, 3
	6J5	
	6J5-GT/G	
	6L5-G	1, 3
	6P5-GT/G	
	6SN7-GT	2, 3
	7A4	4
	12J5-GT	3
	12SN7-GT	2, 3
	27	1, 3, 4
	37	1, 4
	56	1, 3, 4
	76	1, 4
	See pp. 14-15: Key 28-41	
6C5-GT/G*	6AE5-GT/G	
	6C5	
	6F8-G	1, 2, 3
	6J5	
	6J5-GT/G	
	6L5-G	1, 3
	6P5-GT/G	
	6SN7-GT	2, 3
	7A4	4
	12J5-GT	3
	12SN7-GT	2, 3
	27	1, 3, 4

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6C5-GT/G*—Continued		
	37	1, 4
	56	1, 3, 4
	76	1, 4
	See pp. 14-15: Key 28-41	
6C6	6D7	4
	6J7	2, 4
	6J7-G	4
	6J7-GT	2, 4
	6SJ7	2, 4
	6SJ7-GT	2, 4
	6W7-G	3, 4
	7C7	2, 3, 4
	12J7-GT/G	2, 3, 4
	12SJ7	2, 3, 4
	12SJ7-GT	2, 3, 4
	57	3
	77	
	See pp. 14-15: Key 44-50	
6C7	6R7	2, 4
	6R7-GT/G	2, 4
	6SR7	2, 4
	6ST7	2, 3, 4
	6V7-G	4
	7E6	2, 4
	12SR7	2, 3, 4
	55	3, 4
	85	4
	See pp. 14-15: Key 32, 40	
6C8-G	6F8-G	3
	6SN7-GT	2, 3
	12AH7-GT	2, 3
	12SN7-GT	2, 3
	See pp. 14-15: Key 10, 33, 41	
6D6	6E7	4
	6K7	2, 4
	6K7-G	4
	6K7-GT	2, 4
	6S7	2, 3, 4
	6S7-G	3, 4
	6SK7	2, 4
	6SK7-GT/G	2, 4
	6SS7	2, 3, 4
	6U7-G	4
	7A7	2, 4
	7B7	2, 3, 4
	12K7-GT/G	2, 3, 4
	12SK7	2, 3, 4
	12SK7-GT/G	2, 3, 4
	14A7	2, 3, 4
	39/44	4
	58	3
	78	
	See pp. 14-15: Key 44-50	
6D7	6C6	4
	6J7	2, 4
	6J7-G	4
	6J7-GT	2, 4
	6SJ7	2, 4
	6SJ7-GT	2, 4
	6W7-G	3, 4
	7C7	2, 3, 4
	12J7-GT/G	2, 3, 4
	12SJ7	2, 3, 4
	12SJ7-GT/G	2, 3, 4
	57	3, 4
	77	4
	See pp. 14-15: Key 44-50	
6D8-G	2A7	3, 4
	6A7	3, 4
	6A7S	3, 4
	6A8	2, 3

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6D8-G—Continued		
	6A8-G	3
	6A8-GT	2, 3
	7A8	2, 4
	7B8	2, 3, 4
	12A8-GT/G	2, 3
	See pp. 14-15: Key 20-24	
6E5	2E5	3
	See pp. 14-15: Key 25, 26	
6E6	See pp. 14-15: Key 9, 10	
6E7	6D6	4
	6K7	2, 4
	6K7-G	4
	6K7-GT	2, 4
	6S7	2, 3, 4
	6S7-G	3, 4
	6SK7	2, 4
	6SK7-GT/G	2, 4
	6SS7	2, 3, 4
	6U7-G	4
	7A7	2, 4
	7B7	2, 3, 4
	12K7-GT/G	2, 3, 4
	12SK7	2, 3, 4
	12SK7-GT/G	2, 3, 4
	14A7	2, 3, 4
	39/44	4
	58	3, 4
	78	4
	See pp. 14-15: Key 44-50	
6F5	6F5-GT/G	
	6SF5	2
	6SF5-GT	2
	6K5-GT/G	2
	7B4	2, 4
	12F5-GT	3
	12SF5	2, 3
	12SF5-GT	2, 3
	See pp. 14-15: Key 28-41	
6F5-GT/G	6F5	
	6SF5	2
	6SF5-GT	2
	6K5-GT/G	2
	7B4	2, 4
	12F5-GT	3
	12SF5	2, 3
	12SF5-GT	2, 3
	See pp. 14-15: Key 28-41	
6F6	6AD7-G	1, 2, 3
	6F6-G	1
	6K6-GT/G	
	6L6	1, 3
	6L6-G	1, 3
	6V6	
	6V6-GT/G	
	7B5	4
	7C5	4
	12A5	1, 4
	38	1, 2, 4
	41	1, 4
	42	1, 4
	89	1, 2, 4
	See pp. 14-15: Key 12, 14, 15	
6F6-G	6AD7-G	2, 3
	6F6	
	6K6-GT/G	
	6L6	3
	6L6-G	1, 3
	6V6	
	6V6-GT/G	
	7B5	4

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.
3. Filament voltage and/or current changes.
4. Socket change.

For explanation of these changes, see page 2.

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6F8-G—Continued		
	7C5	4
	12A5	4
	38	2, 4
	41	4
	42	4
	89	2, 4
	See pp. 14-15: Key	12, 14, 15
6F7	6P7-G	4
	See pp. 14-15: Key	29, 45
6F8-G	6C8-G	
	6SN7-GT	2
	12AH7-GT	2, 3
	12SN7-GT	2, 3
	See pp. 14-15: Key	33, 41
6G6-G	6A4	1, 3, 4
	6K6-GT/G	3
	6V6	3
	6V6-GT/G	3
	7B5	3, 4
	7C5	3, 4
	38	2, 3, 4
	41	3, 4
	89	2, 3, 4
	See pp. 14-15: Key	12, 14
6H6	6H6-GT/G	1
	7A6	1, 3, 4
	12H6	3
	See pp. 14-15: Key	7
6H6-GT/G	6H6	
	7A6	3, 4
	12H6	3
	See pp. 14-15: Key	6
6J5*	6AE5-GT/G	
	6C5	
	6C5-GT/G	
	6F8-G	1, 2, 3
	6J5-GT/G	
	6L5-G	1, 3
	6P5-GT/G	
	6SN7-GT	2, 3
	7A4	4
	12J5-GT	3
	12SN7-GT	2, 3
	27	1, 3, 4
	37	1, 4
	56	1, 3, 4
	76	1, 4
	See pp. 14-15: Key	28-41
6J5-GT/G*	6AE5-GT/G	
	6C5	
	6C5-GT/G	
	6F8-G	1, 2, 3
	6J5	
	6L5-G	1, 3
	6P5-GT/G	
	6SN7-GT	2, 3
	7A4	4
	12J5-GT	3
	12SN7-GT	2, 3
	27	1, 3, 4
	37	1, 4
	56	1, 3, 4
	76	1, 4
	See pp. 14-15: Key	28-41
6J7	6C6	1, 2, 4
	6D7	1, 2, 4
	6J7-G	1, 2
	6J7-GT	
	6SJ7	2
	6SJ7-GT	2

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6J7—Continued		
	6W7-G	1, 2, 3
	7C7	2, 3, 4
	12J7-GT/G	3
	12SJ7	2, 3
	12SJ7-GT	2, 3
	57	1, 2, 3, 4
	77	1, 2, 4
	See pp. 14-15: Key	44-50
6J7-G	6C6	4
	6D7	4
	6J7	2
	6J7-GT	2
	6SJ7	2
	6SJ7-GT	2
	6W7-G	3
	7C7	2, 3, 4
	12J7-GT/G	2, 3
	12SJ7	2, 3
	12SJ7-GT	2, 3
	57	3, 4
	77	4
	See pp. 14-15: Key	44-50
6J7-GT	6C6	1, 2, 4
	6D7	1, 2, 4
	6J7	
	6J7-G	1, 2
	6SJ7	2
	6SJ7-GT	2
	6W7-G	1, 2, 3
	7C7	2, 3, 4
	12J7-GT/G	3
	12SJ7	2, 3
	12SJ7-GT	2, 3
	57	1, 2, 3, 4
	77	1, 2, 4
	See pp. 14-15: Key	44-50
6J8-G	7J7	2, 4
	See pp. 14-15: Key	20-24
6K5-GT/G	6F5	2
	6F5-GT/G	2
	6SF5	2
	6SF5-GT/G	2
	7B4	2, 4
	12F5-GT	2, 3
	12SF5	2, 3
	12SF5-GT	2, 3
	See pp. 14-15: Key	28-41
6K6-GT/G	6AD7-G	1, 2, 3
	6F6	3
	6F6-G	1, 3
	6L6	1, 3
	6L6-G	1, 3
	6V6	
	6V6-GT/G	
	7B5	4
	7C5	4
	38	1, 2, 4
	41	1, 4
	42	1, 3, 4
	89	1, 2, 4
	See pp. 14-15: Key	12, 14, 15
6K7	6D6	1, 2, 4
	6E7	1, 2, 4
	6K7-G	1, 2
	6K7-GT	
	6S7	3
	6S7-G	1, 2, 3
	6SK7	2
	6SK7-GT/G	2
	6SS7	2, 3
	6U7-G	1, 2

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6K7—Continued		
	7A7	2, 4
	7B7	2, 3, 4
	12K7-GT/G	3
	12SK7	2, 3
	12SK7-GT/G	2, 3
	14A7	2, 3, 4
	39/44	1, 2, 4
	58	1, 2, 3, 4
	78	1, 2, 4
	See pp. 14-15: Key	44-50
6K7-G	6D6	4
	6E7	4
	6K7	2
	6K7-GT	2
	6S7	2, 3
	6S7-G	3
	6SK7	2
	6SK7-GT/G	2
	6SS7	2, 3
	6U7-G	
	7A7	2, 4
	7B7	2, 3, 4
	12K7-GT/G	2, 3
	12SK7	2, 3
	12SK7-GT/G	2, 3
	14A7/12B7	2, 3, 4
	39/44	4
	58	3, 4
	78	4
	See pp. 14-15: Key	44-50
6K7-GT	6D6	1, 2, 4
	6E7	1, 2, 4
	6K7	
	6K7-G	1, 2
	6S7	3
	6S7-G	1, 2, 3
	6SK7	2
	6SK7-GT/G	2
	6SS7	2, 3
	6U7-G	1, 2
	7A7	2, 4
	7B7	2, 3, 4
	12K7-GT/G	3
	12SK7	2, 3
	12SK7-GT/G	2, 3
	14A7/12B7	2, 3, 4
	39/44	1, 2, 4
	58	1, 2, 3, 4
	78	1, 2, 4
	See pp. 14-15: Key	44-50
6K8	6K8-G	1, 2
	6K8-GT	
	12K8	3
	See pp. 14-15: Key	20-24
6K8-G	6K8	2
	6K8-GT	2
	12K8	2, 3
	See pp. 14-15: Key	20-24
6K8-GT	6K8	
	6K8-G	1, 2
	12K8	3
	See pp. 14-15: Key	20-24
6L5-G*	6AE5-GT/G	3
	6C5	3
	6C5-GT/G	3
	6F8-G	2, 3
	6J5	3
	6J5-GT/G	3
	6P5-GT/G	3
	6SN7-GT	2, 3
	7A4	3, 4
	12J5-GT	3

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.
3. Filament voltage and/or current changes.
4. Socket change.

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To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6L5-G*—Continued		
	12SN7-GT	2, 3
	27	3, 4
	37	3, 4
	56	3, 4
	76	3, 4
	See pp. 14-15: Key	28-41
6L6	6L6-G	1
	See pp. 14-15: Key	12, 14, 15
6L6-G	6L6	
	See pp. 14-15: Key	12, 14, 15
6L7	6L7-G	1, 2
	See pp. 14-15: Key	20-24
6L7-G	6L7	2
	See pp. 14-15: Key	20-24
6N6-G	6B5	4
	See pp. 14-15: Key	11, 12, 14
6N7 or **6N7-GT/G**	6A6	1, 4
	6N7, 6N7-GT/G	
	6Y7-G	1
	6Z7-G	1
	53	1, 3, 4
	79	1, 2, 4
	See pp. 14-15: Key	10
6P5-GT/G*	6AE5-GT/G	
	6C5	
	6C5-GT/G	
	6F8-G	1, 2, 3
	6J5	
	6J5-GT/G	
	6L5-G	1, 3
	6SN7-GT	2, 3
	7A4	4
	12J5-GT	3
	12SN7-GT	2, 3
	27	1, 3, 4
	37	1, 4
	56	1, 3, 4
	76	1, 4
	See pp. 14-15: Key	28-41
6P7-G	6F7	4
	See pp. 14-15: Key	29, 45
6Q7	2A6	1, 2, 3, 4
	6B6-G	1, 2
	6Q7-G	1, 2
	6Q7-GT	
	6SQ7	2
	6SQ7-GT/G	2
	6T7-G	1, 2, 3
	7B6	2, 4
	7C6	2, 3, 4
	12Q7-GT/G	3
	12SQ7	2, 3
	12SQ7-GT/G	2, 3
	75	1, 2, 4
	See pp. 14-15: Key	32, 40
6Q7-G	2A6	3, 4
	6B6-G	
	6Q7	2
	6Q7-GT	2
	6SQ7	2
	6SQ7-GT/G	2
	6T7-G	3
	7B6	2, 4
	7C6	2, 3, 4
	12Q7-GT/G	2, 3
	12SQ7	2, 3
	12SQ7-GT/G	2, 3
	75	4
	See pp. 14-15: Key	32, 40
6Q7-GT	2A6	1, 2, 3, 4
	6B6-G	1, 2
	6Q7	
	6Q7-G	1, 2
	6SQ7	2
	6SQ7-GT/G	2
	6T7-G	1, 2, 3
	7B6	2, 4
	7C6	2, 3, 4
	12Q7-GT/G	3
	12SQ7	2, 3
	12SQ7-GT/G	2, 3
	75	1, 2, 4
	See pp. 14-15: Key	32, 40
6R7	6C7	1, 2, 4
	6R7-GT/G	
	6SR7	2
	6ST7	2, 3
	6V7-G	1, 2
	7E6	2, 4
	12SR7	2, 3
	55	1, 2, 3, 4
	85	1, 2, 4
	See pp. 14-15: Key	32, 40
6R7-GT/G	6C7	1, 2, 4
	6R7	
	6SR7	2
	6ST7	2, 3
	6V7-G	1, 2
	7E6	2, 4
	12SR7	2, 3
	55	1, 2, 3, 4
	85	1, 2, 4
	See pp. 14-15: Key	32, 40
6S7	6D6	1, 2, 3, 4
	6E7	1, 2, 3, 4
	6K7	3
	6K7-G	1, 2, 3
	6K7-GT	3
	6S7-G	1, 2
	6SK7	2, 3
	6SK7-GT/G	2, 3
	6SS7	2
	6U7-G	1, 2, 3
	7A7	2, 3, 4
	7B7	2, 4
	12K7-GT/G	3
	12SK7	2, 3
	12SK7-GT/G	2, 3
	14A7/12B7	2, 3, 4
	39/44	1, 2, 3, 4
	58	1, 2, 3, 4
	78	1, 2, 3, 4
	See pp. 14-15: Key	44-50
6S7-G	6D6	3, 4
	6E7	3, 4
	6K7	2, 3
	6K7-G	3
	6K7-GT	2, 3
	6S7	2
	6SK7	2, 3
	6SK7-GT/G	2, 3
	6SS7	2
	6U7-G	3
	7A7	2, 3, 4
	7B7	2, 4
	12K7-GT/G	2, 3
	12SK7	2, 3
	12SK7-GT/G	2, 3
	14A7/12B7	2, 3, 4
	39/44	3, 4
	58	3, 4
6S7-G—Continued		
	78	3, 4
	See pp. 14-15: Key	44-50
6SA7	6SA7-GT/G	
	7Q7	4
	12SA7	3
	12SA7-GT/G	3
	See pp. 14-15: Key	20-24
6SA7-GT/G	6SA7	
	7Q7	4
	12SA7	3
	12SA7-GT/G	3
	See pp. 14-15: Key	20-24
6SC7	6SL7-GT	2
	7F7	4
	12SC7	3
	12SL7-GT	2, 3
	See pp. 14-15: Key	33, 41
6SF5	6F5	2
	6F5-GT/G	2
	6SF5-GT	
	6K5-GT/G	2
	7B4	4
	12F5-GT	2, 3
	12SF5	3
	12SF5-GT	3
	See pp. 14-15: Key	28-41
6SF5-GT	6F5	2
	6F5-GT/G	2
	6SF5	
	6K5-GT/G	2
	7B4	4
	12F5-GT	2, 3
	12SF5	3
	12SF5-GT	3
	See pp. 14-15: Key	28-41
6SF7	12SF7	3
	See pp. 14-15: Key	46
6SG7	6AB7	2, 3
	7H7	4
	12SG7	3
	See pp. 14-15: Key	44-50
6SH7	6AC7	2, 3
	6AG5	4
	7G7	3, 4
	12SH7	3
	See pp. 14-15: Key	44-50
6SJ7	6C6	1, 2, 4
	6D7	1, 2, 4
	6J7	2
	6J7-G	1, 2
	6J7-GT	2
	6SJ7-GT	
	6W7-G	1, 2, 3
	7C7	3, 4
	12J7-GT/G	2, 3
	12SJ7	3
	12SJ7-GT	3
	57	1, 2, 3, 4
	77	1, 2, 4
	See pp. 14-15: Key	44-50
6SJ7-GT	6C6	1, 2, 4
	6D7	1, 2, 4
	6J7	2
	6J7-G	1, 2
	6J7-GT	2
	6SJ7	
	6W7-G	1, 2, 3
	7C7	3, 4
	12J7-GT/G	2, 3
	12SJ7	3

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.
3. Filament voltage and/or current changes.
4. Socket change.

For explanation of these changes, see page 2.

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6SJ7-GT—Continued		
	12SJ7-GT	3
	57	1, 2, 3, 4
	77	1, 2, 4
	See pp. 14-15: Key 44-50	
6SK7	6D6	1, 2, 4
	6E7	1, 2, 4
	6K7	2
	6K7-G	1, 2
	6K7-GT	2
	6S7	2, 3
	6S7-G	1, 2, 3
	6SK7-GT/G	
	6SS7	3
	6U7-G	1, 2
	7A7	4
	7B7	3, 4
	12K7-GT/G	2, 3
	12SK7	3
	12SK7-GT/G	3
	14A7/12B7	3, 4
	39/44	1, 2, 4
	58	1, 2, 3, 4
	78	1, 2, 4
	See pp. 14-15: Key 44-50	
6SK7-GT/G	6D6	1, 2, 4
	6E7	1, 2, 4
	6K7	2
	6K7-G	1, 2
	6K7-GT	2
	6S7	2, 3
	6S7-G	1, 2, 3
	6SK7	
	6SS7	3
	6U7-G	1, 2
	7A7	4
	7B7	3, 4
	12K7-GT/G	2, 3
	12SK7	3
	12SK7-GT/G	3
	14A7/12B7	3, 4
	39/44	1, 2, 4
	58	1, 2, 3, 4
	78	1, 2, 4
	See pp. 14-15: Key 44-50	
6SL7-GT	7F7	4
	12SL7-GT	3
	See pp. 14-15: Key 33, 41	
6SN7-GT	6C8-G	1, 2
	6F8-G	1, 2
	12AH7-GT	2, 3
	12SN7-GT	3
	See pp. 14-15: Key 33, 41	
6SQ7	2A6	1, 2, 3, 4
	6B6-G	1, 2
	6Q7	2
	6Q7-G	1, 2
	6Q7-GT	2
	6SQ7-GT/G	
	6T7-G	1, 2, 3
	7B6	4
	7C6	3, 4
	12Q7-GT/G	2, 3
	12SQ7	3
	12SQ7-GT/G	3
	75	1, 2, 4
	See pp. 14-15: Key 32, 40	
6SQ7-GT/G	2A6	1, 2, 3, 4
	6B6-G	1, 2
	6Q7	2
	6Q7-G	1, 2
	6Q7-GT	2

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6SQ7-GT/G—Continued		
	6SQ7	
	6T7-G	1, 2, 3
	7B6	4
	7C6	3, 4
	12Q7-GT/G	2, 3
	12SQ7	3
	12SQ7-GT/G	3
	75	1, 2, 4
	See pp. 14-15: Key 32, 40	
6SR7	6C7	1, 2, 4
	6R7	2
	6R7-GT/G	2
	6ST7	3
	6V7-G	1, 2
	7E6	4
	12SR7	3
	55	1, 2, 3, 4
	85	1, 2, 4
	See pp. 14-15: Key 32, 40	
6SS7	6D6	1, 2, 3, 4
	6E7	1, 2, 3, 4
	6K7	2, 3
	6K7-G	1, 2, 3
	6K7-GT	2, 3
	6S7	2
	6S7-G	1, 2
	6SK7	3
	6SK7-GT/G	3
	6U7-G	1, 2, 3
	7A7	3, 4
	7B7	4
	12K7-GT/G	2, 3
	12SK7	3
	12SK7-GT/G	3
	14A7/12B7	3, 4
	39/44	1, 2, 3, 4
	58	1, 2, 3, 4
	78	1, 2, 3, 4
	See pp. 14-15: Key 44-50	
6ST7	6C7	1, 2, 3, 4
	6R7	2, 3
	6R7-GT/G	2, 3
	6SR7	3
	6V7-G	1, 2, 3
	7E6	3, 4
	12SR7	3
	55	1, 2, 3, 4
	85	1, 2, 3, 4
	See pp. 14-15: Key 32, 40	
6T7-G	2A6	3, 4
	6B6-G	3
	6Q7	2, 3
	6Q7-G	3
	6Q7-GT	2, 3
	6SQ7	2, 3
	6SQ7-GT/G	2, 3
	7B6	2, 3, 4
	7C6	2, 4
	12Q7-GT/G	2, 3
	12SQ7	2, 3
	12SQ7-GT/G	2, 3
	75	3, 4
	See pp. 14-15: Key 32, 40	
6U5/6G5	6AB5/6N5	3
	See pp. 14-15: Key 25, 26	
6U7-G	6D6	4
	6E7	4
	6K7	2
	6K7-G	
	6K7-GT	2

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6U7-G—Continued		
	6S7	2, 3
	6S7-G	3
	6SK7	2
	6SK7-GT/G	2
	6SS7	2, 3
	7A7	2, 4
	7B7	2, 3, 4
	12K7-GT/G	2, 3
	12SK7	2, 3
	12SK7-GT/G	2, 3
	14A7/12B7	2, 3, 4
	39/44	4
	58	3, 4
	78	4
	See pp. 14-15: Key 44-50	
6V6	6AD7-G	1, 2, 3
	6F6	3
	6F6-G	1, 3
	6K6-GT/G	
	6L6	1, 3
	6L6-G	1, 3
	6V6-GT/G	
	6Y6-G	1, 3
	7B5	4
	7C5	4
	12A5	1, 3, 4
	38	1, 2, 4
	41	1, 4
	42	1, 3, 4
	89	1, 2, 4
	See pp. 14-15: Key 12, 14, 15	
6V6-GT/G	6AD7-G	1, 2, 3
	6F6	3
	6F6-G	1, 3
	6K6-GT/G	
	6L6	1, 3
	6L6-G	1, 3
	6V6	
	6Y6-G	1, 3
	7B5	4
	7C5	4
	12A5	1, 3, 4
	38	1, 2, 4
	41	1, 4
	42	1, 3, 4
	89	1, 2, 4
	See pp. 14-15: Key 12, 14, 15	
6V7-G	6C7	4
	6R7	2
	6R7-GT/G	2
	6SR7	2
	6ST7	2, 3
	7E6	2, 4
	12SR7	2, 3
	55	3, 4
	85	4
	See pp. 14-15: Key 32, 40	
6W7-G	6C6	3, 4
	6D7	3, 4
	6J7	2, 3
	6J7-G	3
	6J7-GT	2, 3
	6SJ7	2, 3
	6SJ7-GT	2, 3
	7C7	2, 4
	12J7-GT/G	2, 3
	12SJ7	2, 3
	12SJ7-GT	2, 3
	57	3, 4
	77	3, 4
	See pp. 14-15: Key 44-50	

1. Space limitations.
2. Wiring changes.
3. Filament voltage and/or current changes.
4. Socket change.

TUBE SUBSTITUTION DIRECTORY

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6X5	6X5-GT/G	
	84/6Z4	1, 4
	See pp. 14-15: Key 2	
6X5-GT/G	6X5	
	84/6Z4	1, 4
	See pp. 14-15: Key 2	
6Y5	6X5	4
	6X5-GT/G	4
	6Z5	2
	7Y4	4
	84/6Z4	4
	See pp. 14-15: Key 2	
6Y6-G	6L6	
	6L6-G	1
	6V6	
	6V6-GT/G	
	7C5	4
	12A5	4
	See pp. 14-15: Key 12, 14, 15	
6Y7-G	6A6	1, 3, 4
	6N7	3
	6N7-GT/G	3
	6Z7-G	
	53	1, 3, 4
	79	2, 4
	See pp. 14-15: Key 10	
6Z5	6X5	4
	6X5-GT/G	4
	7Y4	4
	84/6Z4	4
	See pp. 14-15: Key 2	
6Z7-G	6A6	1, 3, 4
	6N7	3
	6N7-GT/G	3
	6Y7-G	3
	53	1, 3, 4
	79	2, 3, 4
	See pp. 14-15: Key 10	
6ZY5-G	6X5	3
	6X5-GT/G	3
	6Y5	3, 4
	6Z5	3, 4
	7Y4	3, 4
	84/6Z4	3, 4
	See pp. 14-15: Key 2	
7A4*	6AE5-GT/G	4
	6C5	4
	6C5-GT/G	4
	6F8-G	1, 3, 4
	6J5	4
	6J5-GT/G	4
	6L5-G	1, 3, 4
	6P5-GT/G	4
	6SN7-GT	3, 4
	12J5-GT	3, 4
	12SN7-GT	3, 4
	27	1, 3, 4
	37	1, 4
	56	1, 3, 4
	76	1, 4
	See pp. 14-15: Key 28-41	
7A5	6L6	1, 3, 4
	6L6-G	1, 3, 4
	6V6	4
	6V6-GT/G	4
	6Y6-G	1, 3, 4
	7C5	
	12A5	1, 4
	See pp. 14-15: Key 12, 14, 15	
7A6	6H6	3, 4
	6H6-GT/G	3, 4
7A6—Continued		
	12H6	3, 4
	See pp. 14-15: Key 7	
7A7	6D6	1, 2, 4
	6E7	1, 2, 4
	6K7	2, 4
	6K7-G	1, 2, 4
	6K7-GT	2, 4
	6S7	2, 3, 4
	6S7-G	1, 2, 3, 4
	6SK7	4
	6SK7-GT/G	4
	6SS7	3, 4
	6U7-G	1, 2, 4
	7B7	3
	12K7-GT/G	2, 3, 4
	12SK7	3, 4
	12SK7-GT/G	3, 4
	14A7/12B7	3
	39/44	1, 2, 4
	58	1, 2, 3, 4
	78	1, 2, 4
	See pp. 14-15: Key 44-50	
7A8	2A7	1, 2, 3, 4
	6A7	1, 2, 3, 4
	6A7S	1, 2, 3, 4
	6A8	2, 3, 4
	6A8-G	1, 2, 3, 4
	6A8-GT	2, 3, 4
	6D8-G	1, 2, 4
	7B8	3
	12A8-GT/G	2, 3, 4
	See pp. 14-15: Key 20-24	
7B4	6F5	2, 4
	6F5-GT/G	2, 4
	6SF5	4
	6SF5-GT	4
	6K5-GT/G	2, 4
	12F5-GT	2, 3, 4
	12SF5	3, 4
	12SF5-GT	3, 4
	See pp. 14-15: Key 28-41	
7B5	6AD7-G	1, 3, 4
	6F6	3, 4
	6F6-G	1, 3, 4
	6K6-GT/G	4
	6L6	1, 3, 4
	6L6-G	1, 3, 4
	6V6	4
	6V6-GT/G	4
	7C5	
	38	1, 2, 4
	41	1, 4
	42	1, 3, 4
	89	1, 2, 4
	See pp. 14-15: Key 12, 14, 15	
7B6	2A6	1, 2, 3, 4
	6B6-G	1, 2, 4
	6Q7	2, 4
	6Q7-G	1, 2, 4
	6Q7-GT	2, 4
	6SQ7	4
	6SQ7-GT/G	4
	6T7-G	1, 2, 3, 4
	7C6	3
	12Q7-GT/G	2, 3, 4
	12SQ7	3, 4
	12SQ7-GT/G	3, 4
	75	1, 2, 4
	See pp. 14-15: Key 32, 40	
7B7	6D6	1, 2, 3, 4
	6E7	1, 2, 3, 4
7B7—Continued		
	6K7	2, 3, 4
	6K7-G	1, 2, 3, 4
	6K7-GT	2, 3, 4
	6S7	2, 4
	6S7-G	1, 2, 4
	6SK7	3, 4
	6SK7-GT/G	3, 4
	6SS7	4
	6U7-G	1, 2, 3, 4
	7A7	3
	12K7-GT/G	2, 3, 4
	12SK7	3, 4
	12SK7-GT/G	3, 4
	14A7/12B7	3
	39/44	1, 2, 3, 4
	58	1, 2, 3, 4
	78	1, 2, 3, 4
	See pp. 14-15: Key 44-50	
7B8	2A7	1, 2, 3, 4
	6A7	1, 2, 4
	6A7S	1, 2, 4
	6A8	2, 4
	6A8-G	1, 2, 4
	6A8-GT	2, 4
	6D8-G	1, 2, 3, 4
	7A8	3
	12A8-GT/G	2, 3, 4
	See pp. 14-15: Key 20-24	
7C5	6AD7-G	1, 3, 4
	6F6	3, 4
	6F6-G	1, 3, 4
	6K6-GT/G	4
	6L6	1, 3, 4
	6L6-G	1, 3, 4
	6V6	4
	6V6-GT/G	4
	6Y6-G	1, 3, 4
	7B5	
	12A5	1, 3, 4
	38	1, 2, 4
	41	1, 4
	42	1, 3, 4
	89	1, 2, 4
	See pp. 14-15: Key 12, 14, 15	
7C6	2A6	1, 2, 3, 4
	6B6-G	1, 2, 3, 4
	6Q7	2, 3, 4
	6Q7-G	1, 2, 3, 4
	6Q7-GT	2, 3, 4
	6SQ7	3, 4
	6SQ7-GT/G	3, 4
	6T7-G	1, 2, 4
	7B6	3
	12Q7-GT/G	2, 3, 4
	12SQ7	3, 4
	12SQ7-GT/G	3, 4
	75	1, 2, 3, 4
	See pp. 14-15: Key 32, 40	
7C7	6C6	1, 2, 3, 4
	6D7	1, 2, 3, 4
	6J7	2, 3, 4
	6J7-G	1, 2, 3, 4
	6J7-GT	2, 3, 4
	6SJ7	3, 4
	6SJ7-GT	3, 4
	6W7-G	1, 2, 4
	12J7-GT/G	2, 3, 4
	12SJ7	3, 4
	12SJ7-GT	3, 4
	57	1, 2, 3, 4
	77	1, 2, 3, 4
	See pp. 14-15: Key 44-50	

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.
3. Filament voltage and/or current changes.
4. Socket change.

For explanation of these changes, see page 2.

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
7E6	6C7	1, 2, 4
	6R7	2, 4
	6R7-GT/G	2, 4
	6SR7	4
	6ST7	3, 4
	6V7-G	1, 2, 4
	12SR7	3, 4
	55	1, 2, 3, 4
	85	1, 2, 4
	See pp. 14-15: Key 32, 40	
7E7	See pp. 14-15: Key 47, 48	
7F7	6SL7-GT	4
	12SL7-GT	3, 4
	See pp. 14-15: Key 33, 41	
7G7	6AC7	4
	6AG5	4
	6SH7	4
	See pp. 14-15: Key 44-50	
7H7	6AB7	3, 4
	6SG7	4
	12SG7	3, 4
	See pp. 14-15: Key 44-50	
7J7	6J8-G	1, 2, 4
	See pp. 14-15: Key 20-24	
7Q7	6SA7	4
	6SA7-GT/G	4
	See pp. 14-15: Key 20-24	
7Y4	6X5	3, 4
	6X5-GT/G	3, 4
	6Z5	1, 3, 4
	84/6Z4	1, 4
	See pp. 14-15: Key 2	
12A5	6L6	3, 4
	6L6-G	1, 3, 4
	6V6	4
	6V6-GT/G	4
	6Y6-G	1, 3, 4
	7C5	4
	See pp. 14-15: Key 12, 14, 15	
12A7	25A7-GT/G	2, 3, 4
	See pp. 14-15: Key 18	
12A8-GT/G	6A7	1, 2, 3, 4
	6A7S	1, 2, 3, 4
	6A8	3
	6A8-G	1, 2, 3
	6A8-GT	3
	6D8-G	1, 2, 3
	7A8	2, 3, 4
	7B8	2, 3, 4
	See pp. 14-15: Key 20-24	
12AH7-GT	6C8-G	1, 2, 3
	6F8-G	1, 2, 3
	6SN7-GT	2, 3
	12SN7-GT	2, 3
	See pp. 14-15: Key 33, 41	
12B8-GT	25B8-GT	3
	See pp. 14-15: Key 45	
12C8	6B8	3
	6B7	1, 2, 3, 4
	6B7S	1, 2, 3, 4
	6B8-G	1, 2, 3
	See pp. 14-15: Key 49	
12F5-GT	6F5	3
	6F5-GT/G	3
	6K5-GT/G	2, 3
	6SF5	2, 3
	6SF5-GT	2, 3
	7B4	2, 3, 4
	12SF5	2
12F5-GT—Continued		
	12SF5-GT	2
	See pp. 14-15: Key 28-41	
12H6	6H6	3
	6H6-GT/G	1, 3
	7A6	1, 3, 4
	See pp. 14-15: Key 7	
12J5-GT*	6AE5-GT/G	3
	6C5	3
	6C5-GT/G	3
	6F8-G	1, 2, 3
	6J5	3
	6J5-GT/G	3
	6L5-G	1, 3
	6P5-GT/G	3
	6SN7-GT	2, 3
	7A4	3, 4
	12SN7-GT	2, 3
	37	1, 3, 4
	76	1, 3, 4
	See pp. 14-15: Key 28-41	
12J7-GT/G	6C6	1, 2, 3, 4
	6D7	1, 2, 3, 4
	6J7-G	1, 2, 3
	6J7-GT	3
	6SJ7	2, 3
	6SJ7-GT	2, 3
	6W7-G	1, 2, 3
	7C7	2, 3, 4
	12SJ7	2
	12SJ7-GT	2
	77	1, 2, 3, 4
	See pp. 14-15: Key 44-50	
12K7-GT/G	6D6	1, 2, 3, 4
	6E7	1, 2, 3, 4
	6K7	3
	6K7-G	1, 2, 3
	6K7-GT	3
	6S7	3
	6S7-G	1, 2, 3
	6SK7	2, 3
	6SK7-GT/G	2, 3
	6SS7	2, 3
	6U7-G	1, 2, 3
	7A7	2, 3, 4
	7B7	2, 3, 4
	12SK7	2
	12SK7-GT/G	2
	14A7/12B7	2, 4
	39/44	1, 2, 3, 4
	78	1, 2, 3, 4
	See pp. 14-15: Key 44-50	
12K8	6K8	3
	6K8-G	1, 2, 3
	6K8-GT	3
	See pp. 14-15: Key 20-24	
12Q7-GT/G	6B6-G	1, 2, 3
	6Q7	3
	6Q7-G	1, 2, 3
	6Q7-GT	3
	6SQ7	2, 3
	6SQ7-GT/G	2, 3
	6T7-G	1, 2, 3
	7B6	2, 3, 4
	7C6	2, 3, 4
	12SQ7	2
	12SQ7-GT/G	2
	75	1, 2, 3, 4
	See pp. 14-15: Key 32, 40	
12SA7	6SA7	3
	6SA7-GT/G	3
12SA7—Continued		
	7Q7	3, 4
	See pp. 14-15: Key 20-24	
12SA7-GT/G	6SA7	3
	6SA7-GT/G	3
	7Q7	3, 4
	See pp. 14-15: Key 20-24	
12SC7	6SC7	3
	6SL7-GT	2, 3
	7F7	3, 4
	12SL7-GT	2
	See pp. 14-15: Key 33, 41	
12SF5	6F5	2, 3
	6F5-GT/G	2, 3
	6K5-GT/G	2, 3
	6SF5	3
	6SF5-GT	3
	7B4	3, 4
	12F5-GT	2
	12SF5-GT	
	See pp. 14-15: Key 28-41	
12SF5-GT	6F5	2, 3
	6F5-GT/G	2, 3
	6K5-GT/G	2, 3
	6SF5	3
	6SF5-GT	3
	7B4	3, 4
	12F5-GT	2
	12SF5	
	See pp. 14-15: Key 28-41	
12SF7	6SF7	3
	See pp. 14-15: Key 46	
12SG7	6AB7	2, 3
	6SG7	3
	7H7	3, 4
	See pp. 14-15: Key 44-50	
12SH7	6AC7	2, 3
	6AG5	3, 4
	6SH7	3
	7G7	3, 4
	See pp. 14-15: Key 44-50	
12SJ7	6C6	1, 2, 3, 4
	6D7	1, 2, 3, 4
	6J7-G	1, 2, 3
	6J7-GT	2, 3
	6SJ7	3
	6SJ7-GT	3
	6W7-G	1, 2, 3
	7C7	3, 4
	12J7-GT/G	2
	12SJ7-GT	
	77	1, 2, 3, 4
	See pp. 14-15: Key 44-50	
12SJ7-GT	6C6	1, 2, 3, 4
	6D7	1, 2, 3, 4
	6J7-G	1, 2, 3
	6J7-GT	2, 3
	6SJ7	3
	6SJ7-GT	3
	6W7-G	1, 2, 3
	7C7	3, 4
	12J7-GT/G	2
	12SJ7	
	77	1, 2, 3, 4
	See pp. 14-15: Key 44-50	
12SK7	6D6	1, 2, 3, 4
	6E7	1, 2, 3, 4
	6K7	2, 3
	6K7-G	1, 2, 3
	6K7-GT	2, 3

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.
3. Filament voltage and/or current changes.
4. Socket change.

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
12SK7—Continued		
	6S7	2, 3
	6S7-G	1, 2, 3
	6SK7	3
	6SK7-GT/G	3
	6SS7	3
	6U7-G	1, 2, 3
	7A7	3, 4
	7B7	3, 4
	12K7-GT/G	2
	12SK7-GT/G	
	14A7/12B7	4
	39/44	1, 2, 3, 4
	78	1, 2, 3, 4
	See pp. 14-15: Key 44-50	
12SK7-GT/G	6D6	1, 2, 3, 4
	6E7	1, 2, 3, 4
	6K7	2, 3
	6K7-G	1, 2, 3
	6K7-GT	2, 3
	6S7	2, 3
	6S7-G	1, 2, 3
	6SK7	3
	6SK7-GT/G	3
	6SS7	3
	6U7-G	1, 2, 3
	7A7	3, 4
	7B7	3, 4
	12K7-GT/G	2
	12SK7	
	14A7/12B7	4
	39/44	1, 2, 3, 4
	78	1, 2, 3, 4
	See pp. 14-15: Key 44-50	
12SL7-GT	6SL7-GT	3
	7F7	3, 4
	See pp. 14-15: Key 33, 41	
12SN7-GT	6C8-G	1, 2, 3
	6F8-G	1, 2, 3
	6SN7-GT	3
	12AH7-GT	2, 3
	See pp. 14-15: Key 33, 41	
12SQ7	6B6-G	1, 2, 3
	6Q7	2, 3
	6Q7-G	1, 2, 3
	6Q7-GT	2, 3
	6SQ7	3
	6SQ7-GT/G	3
	6T7-G	1, 2, 3
	7B6	3, 4
	7C6	3, 4
	12Q7-GT/G	2
	12SQ7-GT/G	
	75	1, 2, 3, 4
	See pp. 14-15: Key 32, 40	
12SQ7-GT/G	6B6-G	1, 2, 3
	6Q7	2, 3
	6Q7-G	1, 2, 3
	6Q7-GT	2, 3
	6SQ7	3
	6SQ7-GT/G	3
	6T7-G	1, 2, 3
	7B6	3, 4
	7C6	3, 4
	12Q7-GT/G	2
	12SQ7	
	75	1, 2, 3, 4
	See pp. 14-15: Key 32, 40	
12SR7	6C7	1, 2, 3, 4
	6R7	2, 3
	6R7-GT/G	2, 3
	6SR7	3
12SR7—Continued		
	6ST7	3
	6V7-G	1, 2, 3
	7E6	3, 4
	85	1, 2, 3, 4
	See pp. 14-15: Key 32, 40	
12Z3	1-v	3
	35Z3	3, 4
	35Z4-GT	3, 4
	35Z5-GT/G	3, 4
	45Z3	3, 4
	45Z5-GT	3, 4
	See pp. 14-15: Key 1	
14A7/12B7	6D6	1, 2, 3, 4
	6E7	1, 2, 3, 4
	6K7	2, 3, 4
	6K7-G	1, 2, 3, 4
	6K7-GT	2, 3, 4
	6S7	2, 3, 4
	6S7-G	1, 2, 3, 4
	6SK7	3, 4
	6SK7-GT/G	3, 4
	6SS7	3, 4
	6U7-G	1, 2, 3, 4
	7A7	3
	7B7	3
	12K7-GT/G	2, 4
	12SK7	4
	12SK7-GT/G	4
	39/44	1, 2, 3, 4
	78	1, 2, 3, 4
	See pp. 14-15: Key 44-50	
15	1B4-P	3, 4
	1E5-GP	3, 4
	32	1, 3, 4
	See pp. 14-15: Key 44, 50	
19	1J6-G	3, 4
	See pp. 14-15: Key 10	
24-A	35	
	See pp. 14-15: Key 42-44, 50	
25A6	12A5	1, 3, 4
	25A6-GT/G	
	25B6-G	1
	25C6-G	1
	25L6	
	25L6-GT/G	
	35A5	3, 4
	35L6-GT/G	3
	43	1, 4
	50L6-GT	3
	See pp. 14-15: Key 12, 14	
25A6-GT/G	12A5	1, 3, 4
	25A6	
	25B6-G	1
	25C6-G	1
	25L6	
	25L6-GT/G	
	35A5	3, 4
	35L6-GT/G	3
	43	1, 4
	50L6-GT	3
	See pp. 14-15: Key 12, 14	
25A7-GT/G	32L7-GT	3
	70L7-GT	2, 3
	117L7/M7-GT	2, 3
	117N7-GT	2, 3
	117P7-GT	2, 3
	See pp. 14-15: Key 13, 18	
25AC5-GT/G	6AC5-GT/G	3
	See pp. 14-15: Key 10	
25B5	25N6-G	4
	See pp. 14-15: Key 11	
25B6-G	12A5	3, 4
	25A6	
	25A6-GT/G	
	25C6-G	
	25L6	
	25L6-GT/G	
	35A5	3, 4
	35L6-GT/G	3
	43	4
	50L6-GT	3
	See pp. 14-15: Key 12, 14	
25B8-GT	12B8-GT	3
	See pp. 14-15: Key 45	
25C6-G	12A5	3, 4
	25A6	
	25A6-GT/G	
	25B6-G	
	25L6	
	25L6-GT/G	
	35A5	3, 4
	35L6-GT/G	3
	43	4
	50L6-GT	3
	See pp. 14-15: Key 12, 14	
25L6	12A5	1, 3, 4
	25A6	
	25A6-GT/G	
	25B6-G	1
	25C6-G	1
	25L6-GT/G	
	35A5	3, 4
	35L6-GT/G	3
	43	1, 4
	50L6-GT	3
	See pp. 14-15: Key 12, 14	
25L6-GT/G	12A5	1, 3, 4
	25A6	
	25A6-GT/G	
	25B6-G	1
	25C6-G	1
	25L6	
	35A5	3, 4
	35L6-GT/G	3
	43	1, 4
	50L6-GT	3
	See pp. 14-15: Key 12, 14	
25N6-G	25B5	4
	See pp. 14-15: Key 11	
25Y5	25Z5	
	25Z6	4
	25Z6-GT/G	4
	50Y6-GT/G	3, 4
	50Z7-G	3, 4
	117Z6-GT/G	3, 4
	See pp. 14-15: Key 5	
25Z5	25Y5	
	25Z6	4
	25Z6-GT/G	4
	50Y6-GT/G	3, 4
	50Z7-G	3, 4
	117Z6-GT/G	3, 4
	See pp. 14-15: Key 5	
25Z6	25Y5	1, 4
	25Z5	1, 4
	25Z6-GT/G	
	50Y6-GT/G	3
	50Z7-G	1, 2, 3
	117Z6-GT/G	3
	See pp. 14-15: Key 5	

1. Space limitations.
2. Wiring changes.
3. Filament voltage and/or current changes.
4. Socket change.

For explanation of these changes, see page 2.

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
25Z6-GT/G	25Y5	1, 4
	25Z5	1, 4
	25Z6	
	50Y6-GT/G	3
	50Z7-G	1, 2, 3
	117Z6-GT/G	3
	See pp. 14-15: Key 5	
27	56	
	See pp. 14-15: Key 28-41	
30	1H4-G	4
	See pp. 14-15: Key 28, 32	
31	See pp. 14-15: Key 8	
32	1B4-P	
	1E5-GP	4
	15	3, 4
	See pp. 14-15: Key 42-44, 50	
32L7-GT	25A7-GT/G	3
	70L7-GT	2, 3
	117L7/M7-GT	2, 3
	117N7-GT	2, 3
	117P7-GT	2, 3
	See pp. 14-15: Key 13, 18	
33	See pp. 14-15: Key 14, 19	
34	1A4-P	
	1D5-GP	4
	1D5-GT	4
	See pp. 14-15: Key 42-44, 50	
35	24-A	
	See pp. 14-15: Key 42-44, 50	
35A5	12A5	1, 3, 4
	25A6	3, 4
	25A6-GT/G	3, 4
	25B6-G	1, 3, 4
	25C6-G	1, 3, 4
	25L6	3, 4
	25L6-GT/G	3, 4
	35L6-GT/G	4
	43	1, 3, 4
	50L6-GT	3, 4
	See pp. 14-15: Key 12, 14	
35L6-GT/G	12A5	1, 3, 4
	25A6	3
	25A6-GT/G	3
	25B6-G	1, 3
	25C6-G	1, 3
	25L6	3
	25L6-GT/G	3
	35A5	4
	43	1, 3, 4
	50L6-GT	3
	See pp. 14-15: Key 12, 14	
35Z3	12Z3	1, 3, 4
	35Z4-GT	4
	35Z5-GT/G	4
	45Z3	3, 4
	45Z5-GT	3, 4
	See pp. 14-15: Key 1, 5	
35Z4-GT	12Z3	1, 3, 4
	35Z3	4
	35Z5-GT/G	2
	45Z3	3, 4
	45Z5-GT	2, 3
	See pp. 14-15: Key 1, 5	
35Z5-GT/G	12Z3	1, 3, 4
	35Z3	4
	35Z4-GT	2
	45Z3	3, 4
	45Z5-GT	3
	See pp. 14-15: Key 1, 5	
36	See pp. 14-15: Key 43, 50	
37*	6AE5-GT/G	4
	6C5	4
	6C5-GT/G	4
	6F8-G	3, 4
	6J5	4
	6J5-GT/G	4
	6L5-G	3, 4
	6P5-GT/G	4
	6SN7-GT	3, 4
	7A4	4
	12J5-GT	3, 4
	12SN7-GT	3, 4
	27	3
	56	3
	76	
	See pp. 14-15: Key 28-41	
38	6AD7-G	1, 2, 3, 4
	6F6	2, 3, 4
	6F6-G	1, 2, 3, 4
	6G6-G	2, 3, 4
	6K6-GT/G	2, 3, 4
	6V6	2, 3, 4
	6V6-GT/G	2, 3, 4
	7B5	2, 3, 4
	7C5	2, 3, 4
	41	2, 3, 4
	42	1, 2, 3, 4
	89	3, 4
	See pp. 14-15: Key 12, 14, 15	
39/44	6D6	4
	6E7	4
	6K7	2, 4
	6K7-G	4
	6K7-GT	2, 4
	6S7	2, 3, 4
	6S7-G	3, 4
	6SK7	2, 4
	6SK7-GT/G	2, 4
	6SS7	2, 3, 4
	6U7-G	4
	7A7	2, 4
	7B7	2, 3, 4
	12K7-GT/G	2, 3, 4
	12SK7	2, 3, 4
	12SK7-GT/G	2, 3, 4
	14A7/12B7	2, 3, 4
	58	3, 4
	78	4
	See pp. 14-15: Key 44-50	
41	6AD7-G	1, 3, 4
	6F6	3, 4
	6F6-G	1, 3, 4
	6K6-GT/G	4
	6L6	3, 4
	6L6-G	1, 3, 4
	6V6	4
	6V6-GT/G	4
	7B5	4
	7C5	4
	38	2, 4
	42	1, 3
	89	2
	See pp. 14-15: Key 12, 14, 15	
42	6AD7-G	3, 4
	6F6	4
	6F6-G	4
	6K6-GT/G	4
	6L6	3, 4
	6L6-G	3, 4
	6V6	4
	6V6-GT/G	4
	7B5	4
	7C5	4
42—Continued		
	12A5	4
	38	2, 4
	41	
	89	2
	See pp. 14-15: Key 12, 14, 15	
43	12A5	3, 4
	25A6	4
	25A6-GT/G	4
	25B6-G	4
	25C6-G	4
	25L6	4
	25L6-GT/G	4
	35A5	3, 4
	35L6-GT/G	3, 4
	50L6-GT	3, 4
	See pp. 14-15: Key 12, 14	
45	2A3	1, 3
	See pp. 14-15: Key 8	
45Z3	35Z3	1, 3, 4
	35Z4-GT	1, 3, 4
	35Z5-GT/G	1, 3, 4
	45Z5-GT	1, 3, 4
	See pp. 14-15: Key 1	
45Z5-GT	12Z3	1, 3, 4
	35Z3	3, 4
	35Z4-GT	2, 3
	35Z5-GT/G	3
	45Z3	3, 4
	See pp. 14-15: Key 1	
46	2A5	4
	47	2
	59	3, 4
	See pp. 14-15: Key 10-14	
47	2A5	4
	46	2
	59	3, 4
	See pp. 14-15: Key 10, 14	
49	See pp. 14-15: Key 10	
50L6-GT	12A5	1, 3, 4
	25A6	3
	25A6-GT/G	3
	25B6-G	1, 3
	25C6-G	1, 3
	25L6	3
	25L6-GT/G	3
	35A5	3, 4
	35L6-GT/G	3
	43	1, 3, 4
	See pp. 14-15: Key 12, 14	
50Y6-GT/G	25Y5	1, 3, 4
	25Z5	1, 3, 4
	25Z6	3
	25Z6-GT/G	3
	50Z7-G	1, 2
	117Z6-GT/G	3
	See pp. 14-15: Key 5	
50Z7-G	25Y5	3, 4
	25Z5	3, 4
	25Z6	2, 3
	25Z6-GT/G	2, 3
	50Y6-GT/G	2
	117Z6-GT/G	2, 3
	See pp. 14-15: Key 5	
53	6A6	3
	6N7	3, 4
	6N7-GT/G	3, 4
	6Y7-G	3, 4
	6Z7-G	3, 4
	79	2, 3, 4
	See pp. 14-15: Key 10	

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.
3. Filament voltage and/or current changes.
4. Socket change.

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
55	See pp. 14-15: Key 32, 40	
56	27	3
	See pp. 14-15: Key 28-41	
57	See pp. 14-15: Key 44-50	
58	See pp. 14-15: Key 44-50	
59	2A5	4
	46	4
	47	4
	See pp. 14-15: Key 10, 14	
70L7-GT	25A7-GT/G	2, 3
	32L7-GT	2, 3
	117L7/M7-GT	2, 3
	117N7-GT	2, 3
	117P7-GT	2, 3
	See pp. 14-15: Key 13, 18	
75	2A6	3
	6B6-G	4
	6Q7	2, 4
	6Q7-G	4
	6Q7-GT	2, 4
	6SQ7	2, 4
	6SQ7-GT/G	2, 4
	6T7-G	3, 4
	7B6	2, 4
	7C6	2, 3, 4
	12Q7-GT/G	2, 3, 4
	12SQ7	2, 3, 4
	12SQ7-GT/G	2, 3, 4
	See pp. 14-15: Key 32, 40	
76*	6AE5-GT/G	4
	6C5	4
	6C5-GT/G	4
	6F8-G	3, 4
	6J5	4
	6J5-GT/G	4
	6L5-G	3, 4
	6P5-GT/G	4
	6SN7-GT	3, 4
	7A4	4
	12J5-GT	3, 4
	12SN7-GT	3, 4
	27	3
	37	
	56	3
	See pp. 14-15: Key 28-41	
77	6C6	
	6D7	4
	6J7	2, 4
	6J7-G	4
	6J7-GT	2, 4
	6SJ7	2, 4
77—Continued		
	6SJ7-GT	2, 4
	6W7-G	3, 4
	7C7	2, 3, 4
	12J7-GT/G	2, 3, 4
	12SJ7	2, 3, 4
	12SJ7-GT	2, 3, 4
	See pp. 14-15: Key 44-50	
78	6D6	
	6E7	4
	6K7	2, 4
	6K7-G	4
	6K7-GT	2, 4
	6S7	2, 3, 4
	6S7-G	3, 4
	6SK7	2, 4
	6SK7-GT/G	2, 4
	6SS7	2, 3, 4
	6U7-G	4
	7A7	2, 4
	7B7	2, 3, 4
	12K7-GT/G	2, 3, 4
	12SK7	2, 3, 4
	12SK7-GT/G	2, 3, 4
	14A7/12B7	2, 3, 4
	39/44	4
	58	3
	See pp. 14-15: Key 44-50	
79	6A6	1, 2, 3, 4
	6N7	2, 3, 4
	6N7-GT/G	2, 3, 4
	6Y7-G	2, 4
	6Z7-G	2, 4
	53	1, 2, 3, 4
	See pp. 14-15: Key 10	
80	5T4	4
	5U4-G	1, 3, 4
	5V4-G	4
	5W4	4
	5W4-GT/G	4
	5X4-G	1, 3, 4
	5Y3-GT/G	4
	5Y4-G	4
	5Z3	1, 3
	5Z4	4
	83-v	
	See pp. 14-15: Key 2	
82	See pp. 14-15: Key 3	
83	See pp. 14-15: Key 3	
83-v	5T4	4
	5U4-G	1, 3, 4
83-v—Continued		
	5V4-G	4
	5X4-G	1, 3, 4
	5Z3	1, 3
	See pp. 14-15: Key 2	
84	6X5	3, 4
	6X5-GT/G	3, 4
	6Y5	3, 4
	6Z5	3, 4
	6ZY5-G	4
	7Y4	4
	See pp. 14-15: Key 2	
85	6C7	4
	6R7	4
	6R7-GT/G	4
	6SR7	4
	6ST7	3, 4
	6V7-G	4
	7E6	4
	12SR7	3, 4
	55	3
	See pp. 14-15: Key 32, 40	
89	See pp. 14-15: Key 14	
117L7/M7-GT	25A7-GT/G	2, 3
	32L7-GT	2, 3
	70L7-GT	2, 3
	117N7-GT	2
	117P7-GT	2
	See pp. 14-15: Key 13, 18	
117N7-GT	25A7-GT/G	2, 3
	32L7-GT	2, 3
	70L7-GT	2, 3
	117L7/M7-GT	2
	117P7-GT	
	See pp. 14-15: Key 13, 18	
117P7-GT/G	25A7-GT/G	2, 3
	32L7-GT	2, 3
	70L7-GT	2, 3
	117L7/M7-GT	2
	117N7-GT	
	See pp. 14-15: Key 13, 18	
117Z6-GT/G	25Y5	1, 3, 4
	25Z5	1, 3, 4
	25Z6	3
	25Z6-GT/G	3
	50Y6-GT/G	3
	50Z7-G	1, 2, 3
	See pp. 14-15: Key 5	
183/483	See pp. 14-15: Key 8	
485	See pp. 14-15: Key 28	

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.
3. Filament voltage and/or current changes.
4. Socket change.

EXPLANATION OF NUMBERS INDICATING CHANGES — Concluded

When substitutions are to be made for R-F Amplifier, I-F Amplifier, Converter, Oscillator, and Mixer Types, the substitute type may have a lower or a higher value of transconductance than that of the type to be replaced. If the substitute type has a lower value, it may cause some loss in receiver sensitivity and possibly impaired frequency conversion. In areas relatively close to broadcast stations, satisfactory reception should be obtained, but in remote areas, the diminished receiver sensitivity may be unsatisfactory. If the substitute type has a higher value of transconductance than the type to be replaced, oscillation difficulties may be experienced. These can sometimes be corrected by additional shielding, filtering, or reduction in the screen voltage. In all such substitutions, realignment of the receiver is recommended.

Substitutions for Audio Voltage Amplifier Types can generally be made with satisfactory results because a wide variation in gain is usually permissible. If necessary, the gain obtained with the substitute type can be changed by choosing the right combination of B-supply voltage, bias, grid resistor, and plate load.

CLASSIFICATION CHART
OF RECEIVING TUBES

This chart classifies RCA Receiving Tubes according to their functions and their cathode voltages. It is so arranged as to permit quick determination by the equipment designer or tube user of the type designations of tubes applicable to specific design requirements. Types having similar characteristics and in the same cathode-voltage group are bracketed.

Cathode Volts			1.4	2.0	2.5—5.0	6.3	12.6—117	Key No.
RECTIFIERS *(For rectifiers with amplifier units, see POWER AMPLIFIERS).*								
Half-Wave	high-vacuum					1-v	12Z3 35Z3 [35Z4-GT 35Z5-GT/G] 45Z5-GT 45Z3	1
Full-Wave	high-vacuum				5T4 [5U4-G 5X4-G 5Z3 5W4 5W4-GT/G 5Y3-GT/G 5Y4-G 80 5Z4 5V4-G 83-v]	[6X5, 6X5-GT/G, 84/6Z4] 6Y5 6Z5 6ZY5-G 7Y4	6Z5	2
	mercury-vapor				82 83			3
	gas		Cold-Cathode Types: 0Z4, 0Z4-G					4
Doubler	high-vacuum						25Y5 25Z5 25Z6 25Z6-GT/G 50Y6-GT/G 50Z7-G 117Z6-GT/G	5
DIODE DETECTORS *(For diode detectors with amplifier units, see VOLTAGE AMPLIFIERS and also POWER AMPLIFIERS).*								
One Diode			1A3					6
Two Diodes						[6H6, 6H6-GT/G] 7A6	12H6	7
POWER AMPLIFIERS with and without Rectifiers, Diode Detectors, and Voltage Amplifiers								
Triodes	low-mu	single unit		31	2A3 45 183/483	[6A3 6B4-G]		8
		twin unit				6E6		9
	high-mu	single unit		49	46	6AC5-GT/G	25AC5-GT/G	10
		twin unit	1G6-GT/G	[1J6-G 19]	53	[6N7, 6A6 6N7-GT/G] 6Z7-G [6Y7-G 79]		
	direct-coupled arrangement					[6B5 6N6-G]	[25B5 25N6-G]	11
Beam Tubes	single unit		[1Q5-GT/G 3Q5-GT/G*] 1T5-GT			[6L6 6L6-G] [6V6 6V6-GT/G] 6Y6-G 7A5 7C5	25C6-G 25L6 [25L6-GT/G] 35A5 35L6-GT/G 50L6-GT	12
	with rectifier						32L7-GT 70L7-GT [117L/M7-GT 117P7-GT 117N7-GT]	13
Pentodes	single unit		1A5-GT/G [1S4, 3S4*] 1C5-GT/G 1LA4 1LB4, 3Q4*	[1F4 1F5-G] 1G5-G 1J5-G 33	2A5 47 59	[6F6, 6F6-G, 42] 6A4 7B5 6G6-G 12A5 38 6AG7 89 [6K6-GT/G, 41]	12A5 25A6 [25A6-GT/G 43 25B6-G]	14
	with medium-mu triode					6AD7-G		15
	with diode		1N6-G					16
	with diode & triode		1D8-GT					17
	with rectifier						12A7 25A7-GT/G	18
	twin unit			1E7-G★				19

*, ★: See next page.

CLASSIFICATION CHART OF RCA RECEIVING TUBES

Cathode Volts			1.4	2.0	2.5—5.0	6.3	12.6—117	Key No.
CONVERTERS & MIXERS *(For other types used as Mixers, see VOLTAGE AMPLIFIERS).*								
Converters	pentagrid		1A7-GT/G 1B7-GT 1LA6 1R5	[1C6 1C7-G] [1A6 1D7-G]	2A7	[6A8, 6A8-G 6A8-GT, 6A7 6A7S, 6D8-G] 7B8 7Q7 [6SA7 6SA7-GT/G]	12A8-GT/G [12SA7 12SA7-GT/G]	20
	triode-hexode					[6K8, 6K8-G, 6K8-GT]	12K8	21
	triode-heptode					6J8-G 7J7		22
	octode					7A8		23
Mixers	pentagrid					[6L7, 6L7-G]		24
ELECTRON-RAY TUBES								
Single	with remote cut-off triode					6AB5/6N5 6U5/6G5		25
	with sharp cut-off triode				2E5	6E5		26
Twin	without triode					6AD6-G 6AF6-G		27
VOLTAGE AMPLIFIERS with and without Diode Detectors; TRIODE, TETRODE & PENTODE DETECTORS; OSCILLATORS								
Triodes	medium-mu	single unit	1G4-GT/G	[1H4-G 30]	27 56 485	[6C5, 6C5-GT/G 6J5, 6J5-GT/G 6P5-GT/G, 76] 7A4 37 6L5-G 6AE5-GT/G	12J5-GT	28
		with r-f pentode				[6F7, 6P7-G]		29
		with power pentode				6AD7-G		30
		with power pentode & diode	1D8-GT					31
		with two diodes		[1B5 1H6-G]	55	[6R7, 6R7-GT/G 6SR7, 6ST7] 6C7 7E6 [85 6V7-G]	12SR7	32
		twin unit				6C8-G [6F8-G, 6SN7-GT]■	12AH7-GT 12SN7-GT	33
		twin input				6AE7-GT		34
		twin plate				6AE6-G		35
	high-mu	single unit				[6F5, 6F5-GT/G 6SF5, 6SF5-GT] 7B4 6K5-GT/G	[12SF5 12SF5-GT 12F5-GT]	36
		with r-f pentode					12B8-GT 25B8-GT	37
		with diode & r-f pentode	3A8-GT*					38
		with diode	1H5-GT/G 1LH4					39
		with two diodes			2A6	6T7-G, 7B6, 7C6 [6B6-G, 6SQ7 6SQ7-GT/G, 75] [6Q7 6Q7-G 6Q7-GT]	12Q7-GT/G [12SQ7 12SQ7-GT/G]	40
		twin unit				6SC7 7F7 6SL7-GT	12SC7 12SL7-GT	41
Tetrodes	remote cut-off			1D5-GT	35			42
	sharp cut-off			32	24-A	36		43
Pentodes	remote cut-off	single unit	1T4 1P5-GT	34 [1D5-GP 1A4-P]	58	[6K7, 6K7-G 6K7-GT, 78 6AB7 [6SK7 6SK7-GT/G] 7A7 7B7 7H7 39/44 6SS7 [6D6 6E7 6U7-G 6S7 6S7-G]	[12SK7 12SK7-GT/G] 12K7-GT/G 14A7/12B7	44
		with triode				[6F7, 6P7-G]	12B8-GT 25B8-GT	45
		with diode				6SF7	12SF7	46
		with two diodes				7E7		47
	semi-remote cut-off	single unit				6SG7	12SG7	48
		with two diodes			2B7	[6B8, 6B8-G 6B7, 6B7S]	12C8	49
	sharp cut-off	single unit	1N5-GT/G 1L4 1LN5	[1E5-GP 1B4-P 15]	57	[6J7, 6J7-G, 6J7-GT 6C6, 6D7, 6W7-G, 77 [6SJ7 6SJ7-GT] 7C7 7G7 6SH7 6AC7 6AG5	12SH7 [12SJ7 12SJ7-GT] 12J7-GT/G	50
		with triode & diode	3A8-GT*					51
		with diode	1S5					52
		with two diodes		[1F6 1F7-G]				53

* Filament arranged for either 1.4 or 2.8-volt operation. ■ Two 6J5-GT/G's in one bulb. ★ Two 1F5-G's in one bulb.

TYPICAL CALCULATIONS

for Adding Series & Shunt Resistors to a Heater String

In order to determine the proper value of series and shunt resistors in heater strings, use is made of the following formulas in which E = voltage in volts, I = current in amperes, R = resistance in ohms, and W = power in watts.

$$R = \frac{E}{I} \text{ (which may also be written as } E = I\,R \text{ or as } I = \frac{E}{R})$$

$$W = E\,I \text{ (which may also be written as } W = I^2R \text{ or as } W = \frac{E^2}{R})$$

When the calculated value of resistance is not available in standard fixed-resistor sizes, it is suggested that an adjustable resistor be used in order to obtain the proper value. The wattage rating of either shunt or series resistors should be chosen at about twice the calculated value in order to provide an adequate safety factor under conditions of free circulation of air. A higher factor of safety may be required in compact receivers where air circulation is poor.

As a guide for calculating series- and shunt-resistor values, several examples applying to tube substitutions in 150-milliampere and 300-milliampere heater strings follow.

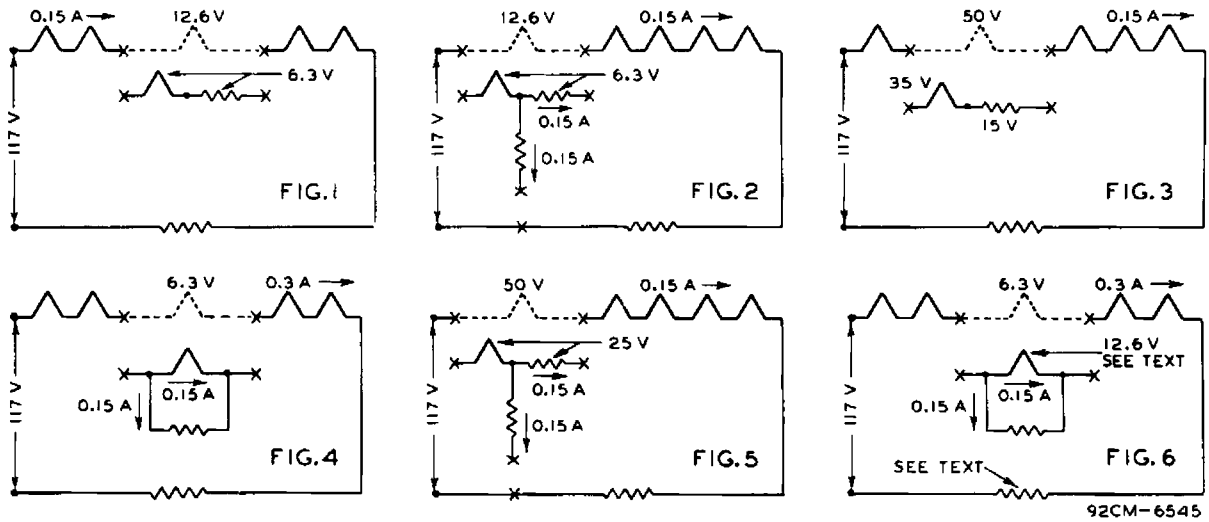

FIG. 1—To substitute a 6.3 v. 150 ma. type for a 12.6 v. 150 ma. type, calculate value of the resistor to be added in series with the 6.3-volt heater. Using the formula R = E/I, we have

$$\frac{12.6-6.3}{0.150} = 42 \text{ ohms.}$$

The calculated wattage is W = E I or $6.3 \times 0.150 = 1$ watt, but to provide an adequate factor of safety use at least a 2-watt size.

FIG. 2—To substitute a 6.3 v. 300 ma. type for a 12.6 v. 150 ma. type in string position as indicated, calculate value of resistor R which must shunt **all components** in the heater string except the substitute type. Using the formula R = E/I, we have

$$\frac{117-6.3}{0.150} = 738 \text{ ohms.}$$

The calculated wattage is W = E I or $(117-6.3) \times 0.150 = 17$ watts, but to provide an adequate factor of safety use a 50-watt size. The resistance to be added in series with the 6.3-volt heater is

$$\frac{12.6-6.3}{0.150} = 42 \text{ ohms,}$$

and the calculated wattage is $6.3 \times 0.150 = 1$ watt, but to provide an adequate factor of safety use at least a 2-watt size.

FIG. 3—To substitute a 35 v. 150 ma. type for a 50 v. 150 ma. type, proceed as in discussion for Fig. 1. Value of series resistor is

$$\frac{50-35}{0.150} = 100 \text{ ohms,}$$

and the calculated wattage is $(50-35) \times 0.150 = 2.3$ watts, but to provide an adequate factor of safety use at least a 5-watt size.

FIG. 4—To substitute a 6.3 v. 150 ma. type for a 6.3 v. 300 ma. type, calculate value of shunt resistor to be added across the 0.150-ampere heater. Using the formula R = E/I, we have

$$\frac{6.3}{0.150} = 42 \text{ ohms.}$$

The calculated wattage is W = E/I or $6.3 \times 0.150 = 1$ watt, but to provide an adequate factor of safety use at least a 2-watt size.

FIG. 5—To substitute a 25 v. 300 ma. type for a 50 v. 150 ma. type in string position as indicated, proceed as in discussion for Fig. 2. Value of shunt resistor R is

$$\frac{117-25}{0.150} = 613 \text{ ohms.}$$

The calculated wattage is $(117-25) \times 0.150 = 14$ watts, but to provide an adequate factor of safety use a 50-watt size. The resistance to be added in series with the 25-volt heater is

$$\frac{50-25}{0.150} = 166 \text{ ohms,}$$

and the calculated wattage is $25 \times 0.150 = 3.8$ watts, but to provide an adequate factor of safety use a 10-watt size.

FIG. 6—To substitute a 12.6 v. 150 ma. type for a 6.3 v. 300 ma. type, proceed as in discussion for Fig. 4. Value of shunt resistor is

$$\frac{12.6}{0.150} = 84 \text{ ohms,}$$

and the calculated wattage is $12.6 \times 0.150 = 2$ watts, but to provide an adequate factor of safety use a 5-watt size. Since the substitute type increases the total voltage drop of the string by 6.3 volts, it will be necessary to decrease the voltage drop, and hence the resistance, through the line-voltage dropping device (such as line cord or ballast tube) by 6.3 volts, or $6.3/0.3 = 21$ ohms. To effect this decrease, the practical solution will usually be found in the use of a new line-voltage dropping device whose resistance is 21 ohms less than that of the original component.

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